

CLAIMS

1. A process for producing a dipeptide, which comprises:

- 5 allowing an enzyme source and a diketopiperazine wherein one or two kinds of α -amino acids or derivatives thereof are condensed with each other to be present in an aqueous medium, said enzyme source being a culture of a microorganism having the ability to produce a dipeptide from a diketopiperazine wherein two kinds of α -amino acids are condensed with each other or a treated matter of the culture; allowing the dipeptide to form and accumulate in the aqueous medium; and
- 15 recovering the dipeptide from the aqueous medium (provided that the case in which the diketopiperazine is a diketopiperazine wherein aspartic acid and phenylalanine are condensed with each other and the dipeptide is aspartylphenylalanine is excluded).

20

2. The process according to Claim 1, wherein the microorganism having the ability to produce a dipeptide from a diketopiperazine wherein two kinds of α -amino acids are condensed with each other is a microorganism which produces dipeptides in which the proportion of one kind of dipeptide is 70% or more.

3. The process according to Claim 1 or 2, wherein the microorganism having the ability to produce a dipeptide from a diketopiperazine wherein two kinds of α -amino acids are condensed with each other is a microorganism obtained by a method comprising:
- 30 [1] the step of culturing test microorganisms using a medium comprising a diketopiperazine wherein two kinds of α -amino acids are condensed with each other as the sole carbon source or nitrogen source;
- 35

[2] the step of selecting microorganisms which are recognized to grow in the above step [1]; and
[3] the step of selecting a microorganism which forms and accumulates a dipeptide in an aqueous medium when the diketopiperazine used in the above step [1] and the microorganisms selected in the above step [2] are allowed to be present in the aqueous medium.

4. The process according to Claim 2, wherein the microorganism having the ability to produce a dipeptide from a diketopiperazine wherein two kinds of α -amino acids are condensed with each other is a microorganism obtained by a method comprising:
[1] the step of culturing test microorganisms using a medium comprising a diketopiperazine wherein two kinds of α -amino acids are condensed with each other as the sole carbon source or nitrogen source;
[2] the step of selecting microorganisms which are recognized to grow in the above step [1]; and
[3] the step of selecting a microorganism which forms and accumulates dipeptides in an aqueous medium, the proportion of one kind of dipeptide in the dipeptides formed and accumulated being 70% or more, when the diketopiperazine used in the above step [1] and the microorganisms selected in the above step [2] are allowed to be present in the aqueous medium.

5. The process according to any one of Claims 1 to 4, wherein the microorganism having the ability to produce a dipeptide from a diketopiperazine wherein two kinds of α -amino acids are condensed with each other is a microorganism belonging to the genus Microbacterium, Sinorhizobium or Pseudomonas.

6. The process according to Claim 5, wherein the microorganism belonging to the genus Microbacterium is

Microbacterium luteolum.

7. A process for producing a dipeptide, which comprises:

- 5 allowing an enzyme source and a diketopiperazine wherein one or two kinds of α -amino acids or derivatives thereof are condensed with each other to be present in an aqueous medium, said enzyme source being a culture of a microorganism belonging to the genus Microbacterium,
10 Sinorhizobium or Pseudomonas having the ability to produce a dipeptide from a diketopiperazine wherein two kinds of α -amino acids are condensed with each other or a treated matter of the culture;
allowing the dipeptide to form and accumulate in the
15 aqueous medium; and
recovering the dipeptide from the aqueous medium.

8. The process according to Claim 8, wherein the microorganism belonging to the genus Microbacterium is
20 Microbacterium luteolum.

9. The process according to any one of Claims 1 to 8, wherein the α -amino acid is an α -amino acid selected from the group consisting of alanine, glutamine, glutamic
25 acid, glycine, valine, leucine, isoleucine, proline, phenylalanine, tryptophan, methionine, serine, threonine, cysteine, asparagine, tyrosine, lysine, arginine, histidine, aspartic acid and ornithine.

- 30 10. The process according to any one of Claims 1 to 9, wherein the two kinds of α -amino acids are alanine and glutamine, and the dipeptide is alanylglutamine.

11. The process according to any one of Claims 1 to
35 10, wherein the treated matter of the culture is concentrated culture, dried culture, cells obtained by

centrifuging the culture, or a product obtained by
subjecting the cells to drying, freeze-drying, treatment
with a surfactant, treatment with a solvent, enzymatic
treatment, immobilization, mechanical friction or
5 ultrasonication.

12. A microorganism having the ability to produce a
dipeptide from a diketopiperazine wherein two kinds of α -
amino acids are condensed with each other which is
10 selected from the group consisting of Microbacterium
luteolum No. 93 (FERM BP-08513), Microbacterium sp. No.
119 (FERM BP-08514), Sinorhizobium sp. No. 1 (FERM BP-
08509), Sinorhizobium sp. No. 164 (FERM BP-08510),
Pseudomonas sp. No. 107 (FERM BP-08511) and Pseudomonas sp.
15 No. 108 (FERM BP-08512).